

REMARKS

The Official Action dated November 21, 2002 has been carefully considered.

Accordingly, the changes presented herewith, taken with the following remarks, are believed sufficient to place the present application in condition for allowance. Reconsideration is respectfully requested.

By the present Amendment, claims 1, 23 and 24 have been amended for matters of clarity in accordance with the teachings of the specification at page 6, lines 6-7, page 9, line 29, and page 15, lines 20-22. Claim 10 has been amended to correspond with the specification at page 11, line 23, and claim 13 is amended for a matter of form only. A Version With Markings Showing Changes Made is attached. It is believed that these changes do not involve any introduction of new matter, whereby entry is believed to be in order and is respectfully requested.

In the Official Action, claims 1, 23 and 24 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner questioned what "enhanced" was compared with. This rejection is traversed and reconsideration is respectfully requested. That is, claims 21, 23 and 24 recite the basis for comparison for each enhanced property thereof. It is therefore believed that claims 21, 23 and 24 are definite, whereby the rejection has been overcome. Reconsideration is respectfully requested.

Claims 1-4, 7, 8, 12 and 15-24 were rejected under 35 U.S.C. §102(b) as being anticipated by the Takumi Japanese Publication 05-059664. The Examiner asserted that Takumi discloses a fiber finishing method which includes immersing a cellulosic fabric in a solution of polyethylene glycol having a molecular weight ranging from 90-5000 gm/mol, drying the fabric, exposing the fabric to formaldehyde vapor in the presence of a catalyst and heat curing. The Examiner further asserted that the claimed properties are inherent in the invention of Takumi.

As will be set forth in detail below, Applicants submit that the substrates, articles of manufacture and processes defined by present claims 1-4, 7, 8, 12 and 15-24 are not anticipated by and are patentably distinguishable from the teachings of Takumi. Accordingly, this rejection is traversed and reconsideration is respectfully requested.

According to claim 1, the invention is directed to a substrate comprising fabric. The substrate is treated with a composition comprising a) formaldehyde, b) polyethylene glycol having a molecular weight of from about 700 gm/mol to about 2500 gm/mol, and c) an acid catalyst. The treated substrate has at least three enhanced fabric benefits selected from the group consisting of i) durable press, as compared with untreated fabric; ii) hand feel, as compared with untreated fabric; iii) anti-abrasion, as compared with fabric treated with formaldehyde and catalyst in the absence of said polyethylene glycol; iv) anti-shrinking, as compared with untreated fabric; and v) anti-yellowing, as compared with at least one of untreated fabric and fabric treated with formaldehyde and catalyst in the absence of said polyethylene glycol.

According to claim 23, the invention is directed to an article of manufacture comprising fabric made up of woven or non-woven fibers. The fabric has at least three enhanced fabric benefits selected from the group consisting of i) durable press, as compared with fabric made up of untreated fibers; ii) hand feel, as compared with fabric made up of untreated fibers; iii) anti-abrasion, as compared with fabric made up of fibers treated with formaldehyde and catalyst in the absence of polyethylene glycol; iv) anti-shrinking, as compared with fabric made up of untreated fibers; and v) anti-yellowing, as compared with at least one of fabric made up of untreated fibers and fabric made up of fibers treated with formaldehyde and catalyst in the absence of polyethylene glycol. The benefits are achieved by treating said fibers with a composition comprising a) formaldehyde, b) polyethylene

glycol having a molecular weight of from about 700 gm/mol to about 2500 gm/mol, and c) an acid catalyst.

Finally, according to claim 24, the invention is directed to a process for providing at least three enhanced benefits to a fabric fiber-comprising substrate. The benefits are selected from the group consisting of i) durable press, as compared with untreated fabric fiber-comprising substrate; ii) hand feel, as compared with untreated fabric fiber-comprising substrate; iii) anti-abrasion, as compared with fabric fiber-comprising substrate treated with formaldehyde and catalyst in the absence of polyethylene glycol; iv) anti-shrinking, as compared with untreated fabric fiber-comprising substrate; and v) anti-yellowing, as compared with at least one of untreated fabric fiber-comprising substrate and fabric fiber-comprising substrate treated with formaldehyde and catalyst in the absence of polyethylene glycol. The process comprises the steps of treating a fabric fiber comprising substrate with a composition comprising a) formaldehyde, b) polyethylene glycol having a molecular weight of from about 700 gm/mol to about 2500 gm/mol, and c) an acid catalyst, and curing said composition on the surface of said substrate.

As set forth in the present specification, for example at page 2, beginning at line 8, many conventional improvements or enhancements to fabric are accompanied by disadvantageous consequences. For example, various processes which provide permanent press properties require strong acidic conditions which can significantly reduce fabric strength. The addition of anti-static or softening agents can cause fabric to prematurely abrade. On the other hand, the present invention provides fabric substrates and articles of manufacture which exhibit combinations of improved properties, so that enhancements are not accompanied by unacceptable fabric property degradation.

Takumi discloses a method for resin finishing of a fiber product. A cellulosic fiber product is immersed in an aqueous solution of a polyhydric alcohol, uniformly dried, exposed

to formaldehyde vapor and then provided with a catalyst such as sulfur dioxide gas and heat treated. Takumi discloses that ethylene glycol or polyethylene glycol having 90-5000 molecular weight are preferred and that the remaining formaldehyde is suppressed to a low contact to provide wrinkle preventing properties and shrink preventing properties without reducing strength.

However, Applicants find no teaching or suggestion by Takumi of a substrate treated with a composition comprising formaldehyde, polyethylene glycol having a molecular weight of from about 700 gm/mol to about 2500 gm/mol, and an acid catalyst. Similarly, Applicants find no teaching or suggestion by Takumi of a process wherein a substrate is treated with a composition comprising formaldehyde, polyethylene glycol having a molecular weight of from about 700 gm/mol to about 2500 gm/mol, and an acid catalyst. Rather, Takumi disclose sequential steps of treatment with a polyhydric alcohol, followed by exposure to formaldehyde vapor, followed by provision of a catalyst.

One skilled in the art will appreciate that a method as taught by Takumi, wherein polyhydric alcohol treatment is followed by exposure to formaldehyde vapor, can result in differing degrees of formaldehyde crosslinking as the amount of formaldehyde contact with the cellulosic fibers is limited both by the polyhydric alcohol pretreatment and the vapor phase of the formaldehyde. In fact, Takumi indicates that formaldehyde on the product is suppressed to a low amount. As a result, it cannot be assumed that the product of Takumi will have properties exhibited by the presently claimed substrates and articles of manufacture, and particularly at least three enhanced fabric benefits, or that the process of Takumi will provide such a product.

It is not surprising then that Applicants find no teaching or suggestion by Takumi regarding substrates or articles of manufacture as recited in claims 1 and 23, exhibiting at least three enhanced benefits selected from the group consisting of i) durable press, ii) hand

feel, iii) anti-abrasion, iv) anti-shrinking, and v) anti-yellowing, or a process for providing such as recited in claim 24. Moreover, in view of the process differences discussed above, it cannot be assumed that the method of Takumi inherently results in such a product.

Anticipation under 35 U.S.C. §102 requires that each and every element as set forth in the claims is found, either expressly or inherently described, in a single prior art reference, *In re Robertson*, 49 U.S.P.Q.2d 1949, 1950 (Fed Cir. 1999). In view of the failure of Takumi to disclose substrates or articles treated with a composition comprising formaldehyde, polyethylene glycol having a molecular weight of from about 700 gm/mol to about 2500 gm/mol, and an acid catalyst as required by the present claims, or provision of at least three enhanced benefits selected from the group consisting of i) durable press, ii) hand feel, iii) anti-abrasion, iv) anti-shrinking, and v) anti-yellowing, Takumi does not expressly or inherently describe each and every element as set forth in the claims. Thus, Takumi does not anticipate claims 1-4, 7, 8, 12 and 15-24 under 35 U.S.C. §102. It is therefore submitted that the rejection under 35 U.S.C. §102 has been overcome. Reconsideration is respectfully requested.

Claims 5, 6 and 9-14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Takumi in view of the Payet published international application WO 99/58758. The Examiner asserted that Payet teach the use of a composition comprising formaldehyde, a catalyst and a silicone elastomer. The Examiner further asserted that it would have been obvious to one skilled in the art to use the specific catalyst of Payet, to use a higher amount of catalyst than taught by Payet, and to use the formaldehyde solution of Payet in the invention of Takumi.

As will be set forth in detail below, Applicants submit that the substrates defined by present claims 5, 6 and 9-14 are nonobvious over and patentably distinguishable from the

teachings of Takumi in view of Payet. Accordingly, this rejection is traversed and reconsideration is respectfully requested.

The substrates of claim 1, from which claims 5, 6 and 9-14 depend, are discussed above, as are the deficiencies of Takumi. These deficiencies are not resolved by Payet. That is, while Payet discloses compositions of formaldehyde, a catalyst and a silicone elastomer for treatment of fabric, Applicants find no teaching by Payet of compositions comprising formaldehyde, polyethylene glycol having a molecular weight of from about 700 gm/mol to about 2500 gm/mol, and an acid catalyst as required by the present claims. Similarly, Applicants find no teaching by Payet of fabric which is treated with such compositions to provide at least three enhanced benefits selected from the group consisting of i) durable press, ii) hand feel, iii) anti-abrasion, iv) anti-shrinking, and v) anti-yellowing, as recited in claim 1.

Moreover, one skilled in the art would not find it obvious to combine the teachings of Payet, and particularly one skilled in the art would not find it obvious to use a liquid formaldehyde treatment solution as taught by Payet, in the formaldehyde vapor process of Takumi. That is, Takumi has as an objective to provide a product using formaldehyde vapor to suppress formaldehyde to a low content. Accordingly, use of a liquid formaldehyde treatment solution as taught by Payet would encourage greater formaldehyde-fabric contact and therefore would be contrary to the objective of Takumi. Thus, one skilled in the art would not find it obvious to modify Takami along the lines asserted by the Examiner. Accordingly, Payet does not resolve the deficiencies of Takumi.

It is therefore submitted that the substrates defined by claims 5, 6 and 9-14 are nonobvious over and patentably distinguishable from Takumi and Payet, whereby the rejection under 35 U.S.C. §103 has been overcome. Reconsideration is respectfully requested.

It is believed the above represents a complete response to the rejections set forth in the Official Action, and places the present application in condition for allowance. Reconsideration and an early allowance are respectfully requested.

Respectfully submitted,


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VERSION WITH MARKINGS SHOWING CHANGES MADE

In the Claims:

Please amend claims 1, 10, 13, 23 and 24 to read as follows:

1. (Amended) A substrate comprising fabric, the substrate treated with a composition comprising:
 - a) formaldehyde;
 - b) polyethylene glycol having a molecular weight of from about 700 gm/mol to about 2500 gm/mol; and
 - c) an acid catalyst;
wherein the treated substrate has at least three enhanced fabric benefits, said benefits selected from the group consisting of:
 - i) durable press, as compared with untreated fabric;
 - ii) hand feel, as compared with untreated fabric;
 - iii) anti-abrasion, as compared with fabric treated with formaldehyde and catalyst in the absence of said polyethylene glycol;
 - iv) anti-shrinking, as compared with untreated fabric; and
 - v) anti-yellowing, as compared with at least one of untreated fabric and fabric treated with formaldehyde and catalyst in the absence of said polyethylene glycol.

10. (Amended) A substrate according to Claim 9 wherein said composition comprises from about 1% to about [12%] 9% by weight, of said catalyst.

13. (Amended) A substrate according to Claim 12 wherein said catalyst is magnesium chloride, aluminum chloride, citric acid, [and] or mixtures thereof.

23. (Amended) An article of manufacture comprising fabric made up of woven or non-woven fibers, the [fibers] fabric having at least three enhanced fabric benefits, said benefits selected from the group consisting of:

- i) durable press, as compared with fabric made up of untreated fibers;
- ii) hand feel, as compared with fabric made up of untreated fibers;
- iii) anti-abrasion, as compared with fabric made up of fibers treated with formaldehyde and catalyst in the absence of polyethylene glycol;
- iv) anti-shrinking, as compared with fabric made up of untreated fibers;

and

- v) anti-yellowing, as compared with at least one of fabric made up of untreated fibers and fabric made up of fibers treated with formaldehyde and catalyst in the absence of polyethylene glycol;

wherein said benefits are achieved by treating said fibers with a composition comprising:

- a) formaldehyde;
- b) polyethylene glycol having a molecular weight of from about 700 gm/mol to about 2500 gm/mol; and
- c) an acid catalyst.

24. (Amended) A process for providing at least three enhanced benefits to a fabric fiber-comprising substrate, said benefits selected from the group consisting of:

- i) durable press, as compared with untreated fabric fiber-comprising substrate;
- ii) hand feel, as compared with untreated fabric fiber-comprising substrate;

- iii) anti-abrasion, as compared with fabric fiber-comprising substrate treated with formaldehyde and catalyst in the absence of polyethylene glycol;
- iv) anti-shrinking, as compared with untreated fabric fiber-comprising substrate; and
- v) anti-yellowing, as compared with at least one of untreated fabric fiber-comprising substrate and fabric fiber-comprising substrate treated with formaldehyde and catalyst in the absence of polyethylene glycol;

wherein said process comprises the [step] steps of:

- A) treating a fabric fiber-comprising substrate with a composition comprising:
 - a) formaldehyde;
 - b) polyethylene glycol having a molecular weight of from about 700 gm/mol to about 2500 gm/mol; and
 - c) an acid catalyst; and
- B) curing said composition on the surface of said substrate.

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